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sodium (transparent) existing in the alloys which otherwise appear to be homogeneous. Interesting results of the application of photography were shown in a somewhat similar line of research by Professor Roberts-Austen, who, by means of a microscope and camera and a highly magnifying apparatus, demonstrated the existence of minute diamonds (carbon crystals) in steel. A series of photographs was shown by Professor Norman Lockyer, the diagrams affording testimony of the value of the spectroscope and photography in enabling a simple classification of the stars to be made based upon their ascertained chemical composition. Photographs of the moon were exhibited by the Astronomer Royal. M. Guillaume performed an experiment showing the practically non-dilatable character of nickel steel on heating; its application to pendulums is thus suggested. The diffraction kaleidoscope exhibited by Mr. C. P. Butler used the pure spectrum of white light, the colors being reflected at a great number of angles. The Marine Biological Association's exhibit included marine animals illustrating 'commensalism,' a term used to indicate the constant association of animals with one another often for mutual advantages. Professor Oliver Lodge gave a demonstration of Zeeman's discovery of the broadening of spectrum lines by the action of a magnetic field on the source of light. A sodium flame was placed between the terminals of a powerful magnet. On turning on the current the normal bands become double, triple, or even quadruple. Some excellently mounted preparations shown by Dr. Kanthack illustrated the mode of action of the Tsetse fly. Mr. E. Edser and Mr. H. Stansfield exhibited apparatus showing the phase change of light reflected at a glass-silver surface. The apparatus is a modification of Michelson's differential refractometer, the interfering rays being reflected at the back surfaces of the end mirrors. Mr. C. T. Heycock and Mr. F. H. Neville showed some experiments on the superficial color changes of a silver-zinc alloy. In the meeting room Professor W. E. Ayrton gave an experimental demonstration of some electric and mechanical analogues, and Professor J. B. Farmer showed lantern slides

from microphotographs illustrating nuclear divisions in animal and vegetable cells.

UNIVERSITY AND EDUCATIONAL NEWS.

THE United States Supreme Court has dismissed the appeal in the Merritt suit, and the bequests left by Mrs. Catherine M. Garcelon in 1891 will now be paid. Bowdoin College, Brunswick, Me., will receive \$400,000 and a hospital will be established at Oakland, Cal., at a cost of \$600,000.

AN attempt is being made to break the will of the late William Lampson, who bequeathed nearly a million dollars to Yale University. It is to be hoped that the aged aunt and forty-two cousins of Mr. Lampson may be no more successful than were the contestants of the will of Mrs. Garcelon! It seems unfortunate that it is possible for distant relatives to delay and often even to annul public bequests, and that American courts should be so much more disposed than those of European countries to admit objections to the validity of wills.

THE Teachers' College of New York receives \$10,000 by the will of the late Mrs. Julia Augusta Kemp, and is also made her residuary legatee. It is now announced that Mr. Joseph Milbank was the donor who, in March, 1896, gave \$250,000 for enlarging the Teachers' College. The new building, now nearly completed, will be called Milbank Memorial Hall.

THE Building Committee of the University of Montana, at Missoula, has decided to erect a main building at a cost of \$47,500 and a science hall at a cost of \$12,500.

APPLICATIONS for the Savilian professorship of geometry at Oxford University, vacant by the death of Professor Sylvester, must be received not later than June 12th. The salary is about \$4,500 and the duties are confined to the delivery of forty-two lectures.

DR. E. G. JANEWAY, President of the New York Academy of Medicine, has been elected professor of medicine, and Dr. S. F. Dennis, professor of surgery in the faculty of the New York University Bellevue Hospital Medical College.

IT is stated in the daily papers that Dr. Antoneo Crocchia has been elected to the chair of biology in the Catholic University, Washington.

DR. J. S. ELY, professor in the Woman's Medical College, New York, has been elected professor of the theory and practice of medicine in the Medical School of Yale University.

WE learn from the *Botanical Gazette* that Dr. E. B. Copeland has been appointed assistant professor of botany in the University of Indiana in place of Dr. Geo. J. Peirce, who resigned to accept a similar position, in charge of plant-physiology in the Leland Stanford Junior University.

DR. BECK, of the University of Lemberg, has been promoted to a full professorship of physiology, and Dr. Konrad Zeisig has been made second professor of physics in the Polytechnic Institute of Darmstadt. Dr. Deichmüller, observer in the observatory at Bonn, has been appointed associate professor. Dr. Ludwig Heim, of Würzburg, has been called to an associate professorship of bacteriology in the University of Erlangen. Dr. Hillebrand has qualified as docent in astronomy in the University at Vienna.

DISCUSSION AND CORRESPONDENCE.

THE DISCRIMINATION OF SPECIES AND SUB-SPECIES.

DR. MERRIAM's paper in SCIENCE for May 14 (N. S., Vol. V., No. 124, pp. 753-758), entitled 'Suggestions for a New Method of Discriminating between Species and Subspecies,' opens up a question of immense interest and far-reaching importance, respecting which there is room for two widely divergent opinions, both susceptible of support by arguments of considerable weight. Dr. Merriam cites the purely conventional and arbitrary rule adopted in the A. O. U. 'Code of Nomenclature' for deciding the status of closely related forms with reference to whether they are to be ranked as species or subspecies, and calls attention to the well-known inconsistencies sometimes resulting from its use. The failure of the rule to yield always satisfactory results is not due to the principle involved, but to the imperfection of our

knowledge respecting what closely related forms intergrade and what do not. Consequently, it is urged, a stable nomenclature for such forms cannot be attained under this rule till we have a complete knowledge of the relations of such forms; in the meantime their status will be unstable, and their nomenclature, in this respect, subject to change as our knowledge of them increases.

The first part of the rule as summarized by Dr. Merriam (l. c., p. 753)—to wit: "Forms known to intergrade, no matter how different, must be treated as subspecies and bear trinomial names"—presents no difficulty of application and can be carried into effect without imperiling stability of nomenclature. The second part—namely, "forms not known to intergrade, no matter how closely related [or, rather, how closely they resemble each other], must be treated as full species and bear binomial names"—is difficult to apply always consistently. As Dr. Merriam says, "only in a small percentage of cases does an author have at his command a sufficiently large series of specimens, from a sufficient number of well-selected localities, to enable him to say positively that related forms do or do not intergrade;" and that consequently "authors usually exercise their individual judgment as to the *probable* existence or non-existence of intergradation," based, of course, on the nature of the differences, the geographical relationship of the forms, and on general grounds—on what is known to happen in other similar cases. Hence, naturally, some degree of inconsistency results in the use of trinomials, they being frequently employed where conclusive evidence of intergradation is lacking, though strongly indicated by the circumstances of the case. When later information shows that the true relationship of the forms in question has not been correctly indicated, their status must be changed, either from that of a species to a subspecies, or the reverse, as the case may require. But this, while undesirable, is not a serious change, since the 'special' name (specific or subspecific) is necessarily retained—a change far less important than the substitution of one name for another, as not infrequently becomes imperative from other causes.

The real question, then, is whether we can